AMENDMENTS TO THE CLAIMS

Claim 1 (canceled)

Claim 2 (currently amended): The method of claim [[1]]6, wherein the one or more characteristics of a structure includes a size of the structure.

Claim 3 (currently amended): The method of claim [[1]]6, wherein the one or more characteristics of a structure includes a pattern density of the structure.

Claim 4 (currently amended): The method of claim [[1]]6, wherein the one or more characteristics of a structure includes film material and a number of different materials.

Claim 5 (currently amended): The method of claim [[1]]6, wherein one or more chemical or physical properties for the pad includes hardness, thickness, surface grooving, porosity, thickness, Youngs modulus, compressibility, or asperity of the pad.

Claim 6 (currently amended): A method of customizing a polishing pad for chemical mechanical planarization of a substrate, the method comprising:

obtaining one or more characteristics of a structure on a substrate; and

selecting a value for one or more chemical or physical properties for a pad to be used in chemical mechanical planarization of the substrate based on the obtained one or more characteristics of the structures on the substrate[[.]]~~The method of claim 1~~,

wherein selecting [[a]] the value for one or more chemical or physical properties for a pad comprises:

performing a simulation of planarization of the substrate with a model of a CMP process using the pad with a range of values for the one or more chemical or physical properties of the pad; and

selecting [[a]] the value for the one or more chemical or physical properties based on the simulation.

Claim 7 (original): The method of claim 6, further comprising:

providing a pattern density and a deposition bias as inputs to the model of a CMP process.

Claim 8 (original): The method of claim 6, further comprising:

obtaining a planarization length from the model of a CMP process; and

performing a sensitivity analysis to determine a correlation between planarization length and the one or more chemical or physical properties of the pad.

Claim 9 (original): The method of claim 8, wherein the value for the one or more chemical or physical properties is selected based on the determined correlation between planarization length and the one or more chemical or physical properties of the pad to optimize planarization length.

Claim 10 (original): The method of claim 6, further comprising:

identifying dishing and/or erosion from the model of a CMP process; and

performing a sensitivity analysis to determine a correlation between the one or more chemical or physical properties of the pad and dishing and/or erosion.

Claim 11 (original): The method of claim 10, wherein the value for the one or more chemical or physical properties is selected based on the determined correlation between the one or more chemical or physical properties of the pad and dishing and/or erosion to reduce dishing and/or erosion.

Claim 12 (original): The method of claim 6, further comprising:

identifying over-polishing and/or under-polishing from the model of a CMP process; and

performing a sensitivity analysis to determine a correlation between the one or more chemical or physical properties of the pad and over-polishing and/or under-polishing.

Claim 13 (original): The method of claim 12, wherein the value for the one or more chemical or physical properties is selected based on the determined correlation between the one or more chemical or physical properties of the pad and over-polishing and/or under-polishing to reduce over-polishing and/or under-polishing.

Claim 14 (currently amended): The method of claim [[1]]6, wherein the structure is an optoelectronic device.

Claim 15 (currently amended): The method of claim [[1]]6, wherein the substrate is a magnetic disk, an optical disk, a ceramic substrate, or a nano-composite substrate.

Claim 16 (original): A method of customizing a polishing pad for chemical mechanical planarization of a semiconductor wafer, the method comprising:

obtaining one or more characteristics of a chip;

performing a simulation of a chemical mechanical planarization of the wafer with a model of a CMP process using the obtained one or more characteristics of the chip and a range of values for the one or more chemical or physical properties of the pad; and

selecting a value for one or more chemical or physical properties for a pad based on the simulation.

Claim 17 (original): The method of claim 16, wherein the one or more characteristics of the chip includes a pattern density of the chip.

Claim 18 (original): The method of claim 17, wherein one or more chemical or physical properties for the pad includes hardness, thickness, surface grooving, porosity, thickness, Youngs modulus, compressibility, or asperity of the pad.

Claim 19 (original): The method of claim 16, further comprising:

obtaining a planarization length from the model of a CMP process; and

performing a sensitivity analysis to determine a correlation between planarization length and the one or more chemical or physical properties of the pad.

Claim 20 (original): The method of claim 19, wherein the value for the one or more chemical or physical properties is selected based on the determined correlation between planarization length and the one or more chemical or physical properties of the pad to optimize planarization length.

Claim 21 (original): The method of claim 16, further comprising:

identifying dishing and/or erosion from the model of a CMP process; and

performing a sensitivity analysis to determine a correlation between the one or more chemical or physical properties of the pad and dishing and/or erosion.

Claim 22 (original): The method of claim 21, wherein the value for the one or more chemical or physical properties is selected based on the determined correlation between the one or more chemical or physical properties of the pad and dishing and/or erosion to reduce dishing and/or erosion.

Claim 23 (original): The method of claim 16, further comprising:

identifying over-polishing and/or under-polishing from the model of a CMP process; and

performing a sensitivity analysis to determine a correlation between the one or more chemical or physical properties of the pad and over-polishing and/or under-polishing.

Claim 24 (original): The method of claim 23, wherein the value for the one or more chemical or physical properties is selected based on the determined correlation between the one or more chemical or physical properties of the pad and over-polishing and/or under-polishing to reduce over-polishing and/or under-polishing.

Claim 25 (previously presented): A method of customizing a pad used in chemical mechanical polishing (CMP) to planarize a metal or dielectric film comprising:

selecting a value for one or more chemical or physical properties of the pad to compensate for pattern density effects of the different chip or substrate architectures

and optimizing the pad for a derived planarization length, response characteristics for dishing and/or erosion, or final step height at specific pattern features to attain local and global planarization of the chip or substrate.

Claim 26 (previously presented): The method of claim 25, wherein the optimization is performed for planarization of a silicon integrated circuit.

Claim 27 (previously presented): The method of claim 25, wherein the optimization is performed for planarization of an optoelectronic device.

Claim 28 (previously presented): The method of claim 25, wherein the optimization is performed for planarization of a magnetic or optical disk.

Claim 29 (previously presented): The method of claim 25, wherein the optimization is performed for planarization of film on a ceramic or nano-composite substrate.

Claim 30-31 (canceled).